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APR 03 2008

PATENT APPLN. NO. 10/743,747  
SUBMISSION UNDER 37 C.F.R. § 1.114

PATENT

REMARKS

Claim 1 has been amended to precisely recite that in the dialyzer of the present invention, which comprises a substantially cylindrical case, a hollow fiber bundle, a gap formed between an inner wall of the case and the hollow fiber bundle, a blood flow path formed by lumens of the hollow fiber membranes, a dialysate flow path formed by the gap between the inner wall of the case and the hollow fiber membranes and by gaps between the hollow fiber membranes, and a cylindrical elastic tube inserted in the gap between the inner wall of the case and the hollow fiber bundle and substantially contacting the inner wall of the case and having a rib formed on an outer circumferential surface thereof, the substantially cylindrical case has a length M, the cylindrical elastic tube has a length L, and L is less than M. Claim 1 has also been amended to include the limitations that "the rib is fitted into the concave portion so that the elastic tube is securely fixed in the case".

The amendment to claim 1 to recite that the length L of the cylindrical elastic tube is less than the length M of the substantially cylindrical case is supported by the language of original claim 1 which recites that the dialyzer of the present invention has a gap formed between an inner wall of the

substantially cylindrical case and the hollow fiber bundle and that a dialysate flow path is formed by the gap between the inner wall of the case and the hollow fiber membranes. If a gap is formed between an inner wall of the substantially cylindrical case and the hollow fiber bundle, and if a dialysate flow path is formed by the gap between the inner wall of the case and the hollow fiber membranes, the elastic tube cannot occupy the entire length of the cylindrical case. Moreover, the drawings of the application show that  $L$  is less than  $M$  and the specification indicates that  $L$  is less than  $M$  and, specifically, describes that, if  $L$  is more than 90% of  $M$ , the dialysate cannot flow in and out of the gaps between the hollow fiber membranes within the hollow fiber bundle. (See paragraph [0033] of the application as filed).

The limitation that the rib is fitted into the concave portion so that the elastic tube is securely fixed in the case is supported by paragraph [0029] of the specification of the present application.

New claims have been added to the application which recite that in the dialyzer of the present invention,  $L$  is 5% to 90% of  $M$  (claims 17 and 20),  $L$  is 10% to 80% of  $M$  (claims 18 and 21), and  $L$  is 20% to 60% of  $M$  (claims 19 and 22). New claims 17 to 22 are

supported by the description in paragraph [0033] of the specification.

The claims as amended patentably distinguish over the combination of the English translation of FR 2542203 (hereinafter: "FR '203") in view of Bogart (U.S. Patent No. 4,308,654) (hereinafter: "Bogart") and Rekers (U.S. Patent No. 6,251,275) (hereinafter: "Rekers") cited in the Final Action of March 1, 2007.

First, in FR '203, the elastic tube (12) has the same length as the case (2) and no gap is provided between the inner wall of the case and the hollow fiber membranes for the flow of dialysate. The combined teachings of the references would not have suggested to those of ordinary skill in the art to reduce the length of the elastic tube (12) of FR '203 and/or to provide a gap between the inner wall of the case (2) and the hollow fiber membranes (11) for the flow of dialysate.

Second, the proposed modification of the dialyzer of FR '203 according to the teachings of Reker to provide concave portions on the inner wall of the case of FR '203 to provide additional permeate channels will not result in the dialyzer of the present invention, particularly as recited in the amended claims. The proposed modification will not overcome the deficiency of FR '203 that the length of the elastic tube (12) is not less than the

length of the case (2). Also, in the dialyzer of the present invention as recited in claim 1, a rib formed on an outer circumferential surface of the elastic tube is fitted into the concave portion formed on an inner wall of the case so that the elastic tube is securely fixed in the case. Therefore, the concave cannot be an additional permeate channel. The teachings of the references would not have suggested to those of ordinary skill to provide concave portions on the inner wall of the case of FR '201 and to fit the ribs of the elastic tube (12) into the concave portions because such concaves could not have functioned thereafter as additional permeate channels as taught in Rekers.

Moreover, in the present invention, the elastic tube increases a transmembrane pressure difference over that existing in the dialyzer if the elastic tube is not provided. Specifically, as described in paragraphs [0046] and [0047] of the specification of the present application the elastic tube decreases the cross-sectional area of the dialysate flow path. As a result, the dialysate flow path pressure is abruptly increased at the portion in which the elastic tube is inserted. The transmembrane pressure is increased to allow the internal filtration and the internal backfiltration of a large amount of fluid. The elastic tube in FR '203, which extends over the entire length of the case (2) does not

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function to provide an abrupt increase in the dialysate flow path pressure.

For the above reasons, the claims of the application are patentable under the provisions of 35 United States Code and removal of the 35 U.S.C. 103(a) rejection of the claims made in the Final Action of March 1, 2007, is in order and is respectfully requested.

In the event that this paper is not considered to be timely filed, applicants hereby petition for an appropriate extension of time. The fee for any such extension and any additional required fees may be charged to Deposit Account No. 111833.

Respectfully submitted,

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